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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/433,730	11/03/1999	STEVEN T. JAFFE	33754/JWE/B6	2909

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EXAMINER

TSE, YOUNG TOI

ART UNIT	PAPER NUMBER
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2634

DATE MAILED: 04/28/2004

36

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/433,730

Applicant(s)

JAFFE ET AL.

Examiner

YOUNG T. TSE

Art Unit

2634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 February 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 10 and 106-119 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 10 and 106-110 is/are allowed.
- 6) ☒ Claim(s) 111-114 and 117-119 is/are rejected.
- 7) ☒ Claim(s) 115 and 116 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 114 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 114, line 4, the phrase "the second mixer" lacks clear antecedent basis.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 111-114 and 117-119 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eyuboglu and Wang.

Eyuboglu (U.S. Patent No. 4,745,625) discloses a receiver circuit (29) in Fig. 1 which clearly comprises a receiver front end (not shown) for providing a channel signal (14); a first tracking loop including a multiplier (40) and a carrier recovery (42) for acquiring carrier frequency lock of a predetermined frequency component X_k ; a second tracking loop including a linear equalizer (38), the multiplier (40), and a weight update circuit (46) in operative response to the predetermined frequency component X_k ; and a third tracking loop including a sampler A/D converter (34) and a timing recovery circuit (36) for providing a symbol timing parameter or a timing recovery signal in operative response to the predetermined frequency component X_k .

However, Eyuboglu does not explicitly show or suggest that the received channel (14) provided from the receiver front end includes a pilot signal which is provided to each of the first, second, and third tracking loops.

Wang (U.S. Patent No. 6,356,598 B1) also discloses a receiver circuit in Fig. 1 which includes at least a receiver front end having an RF tuner (14) and an IF circuit (16); an ADC converter (19); a digital demodulator and carrier recovery (22) and segment sync and symbol clock recovery (24).

The detailed embodiment of the digital demodulator and carrier recovery (22) is shown in Fig. 3 and the detailed embodiment of the segment sync and symbol clock recovery (24) is shown in Fig. 4.

With respect to claim 111, although Eyuboglu does not explicitly show or suggest that the received channel (14) provided from the receiver front end includes a pilot signal which is provided to each of the first, second, and third tracking loops. Wang teaches that the passband IF output signal from unit (16) is converted to an oversampled digital symbol data stream by an analog to digital converter (19). The output oversampled digital data stream from ADC (19) is demodulated to baseband by an all digital demodulator/carrier recovery network (22). This is done by an all digital phase locked loop in response to the small reference pilot carrier in the received VSB datastream. See col. 2, lines 34-41. Demodulation in unit (22) is performed by an all digital automatic phase control (APC) loop to achieve carrier recovery. The phase locked loop uses the pilot component as a reference for initial acquisition and a normal phase detector for phase acquisition. The pilot signal is embedded in the received datastream, which contains data exhibiting a random, noise-like pattern. See col. 3, lines 45-51. The pilot signal component is also provided to the segment sync and symbol clock recovery (24) for controlling the frequency of the ADC converter (19).

Therefore, it would have been obvious to one of ordinary skill in the art that the signal provided from the receiver front end of Eyuboglu's receiver is capable of containing data and pilot signal and provides the pilot signal to a demodulation circuit for

carrier recovery and timing recovery of acquisition/tracking loops as taught by Wang in order to perform normal phase or frequency offset acquisition of the received signal.

With respect to claim 112, the third loop shown in Figure 4 of Wang's receiver circuit includes an ADC 19 for sampling the input signal to digital signal, VCXO 436 and other circuits for controlling the frequency of the sampling signal by the ADC 19.

With respect to claim 113, the frequency of the VCXO 436 is 21.52 MHz which is at least four time the frequency of the pilot signal of the demodulated signal output by the demodulator 22.

With respect to claim 114, it is well known in the art that a carrier recovery circuit includes an oscillator and a phase locked loop as shown in Figure 3 of Wang's receiver circuit.

With respect to claims 117-119, an adaptive channel equalizer or a slicer located within the equalizer is shown in Figure 1 of Wang's receiver circuit.

Response to Arguments

6. Applicant's arguments filed 17 February 2004 have been fully considered but they are not persuasive.

Applicants mainly argue that Wang's pilot signal does not control the ADC 19.

The examiner agrees with the Applicants interpretation that the ADC 19 may not be controlled by the pilot signal of the demodulated data. However, claim 111 recites a third tracking loop coupled to define a symbol timing parameter in operative response to said pilot signal. Indeed, the demodulated data stream output from the I channel of the

demodulator circuit 22 does include pilot signal and the third loop shown in Figure 4 is coupled to define a symbol timing parameter in operative response to the pilot signal. See column 2, lines 34-43, column 4, lines 2-8, column 5, lines 28-35 and 52-55, and column 6, lines 27-29.

Allowable Subject Matter

7. Claims 10 and 106-110 are allowed.
8. Claims 115 and 116 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Young Tse** whose telephone number is **(703) 305-4736**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Stephen Chin**, can be reached at **(703) 305-4714**.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to:

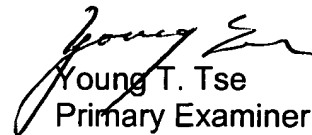
(703) 872-9314 (for Technology Center 2600 only)

Or:

**(703) 872-9315 (for amendments after final rejection only,
please mark "EXPEDITED PROCEDURE")**

Hand-delivered responses should be brought to Crystal Park II, 2121
Crystal Drive, Arlington, VA., Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.


Young T. Tse
Primary Examiner
4/22/04